

SOIL EROSION:

The detachment and movement of soil and rock particles by gravity, wind, water, freezing and thawing, and/or other natural phenomena.



And even as beneath a tempest the whole black earth is oppressed... and all their rivers flow in flood, and many a hillside do the torrents furrow deeply, and down to the dark sea they rush headlong from the mountains with a mighty roar, and the tilled fields of men are wasted;

THE ILIAD, Homer translated by A. T. Murray

A Few of the Dire Consequences of Rampant, Uncontrolled Erosion:

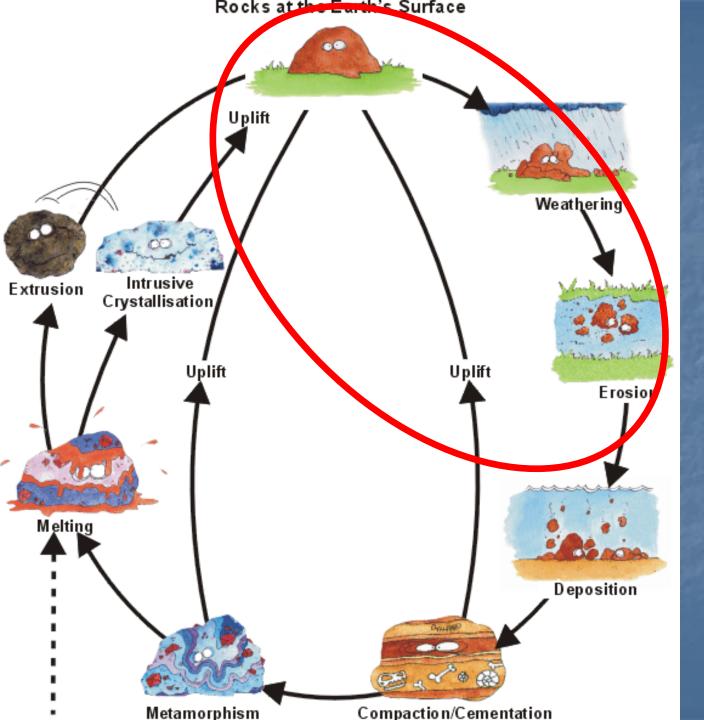








None of these would exist without soil erosion, transport and deposition



Geology 101

Rocks for Jocks

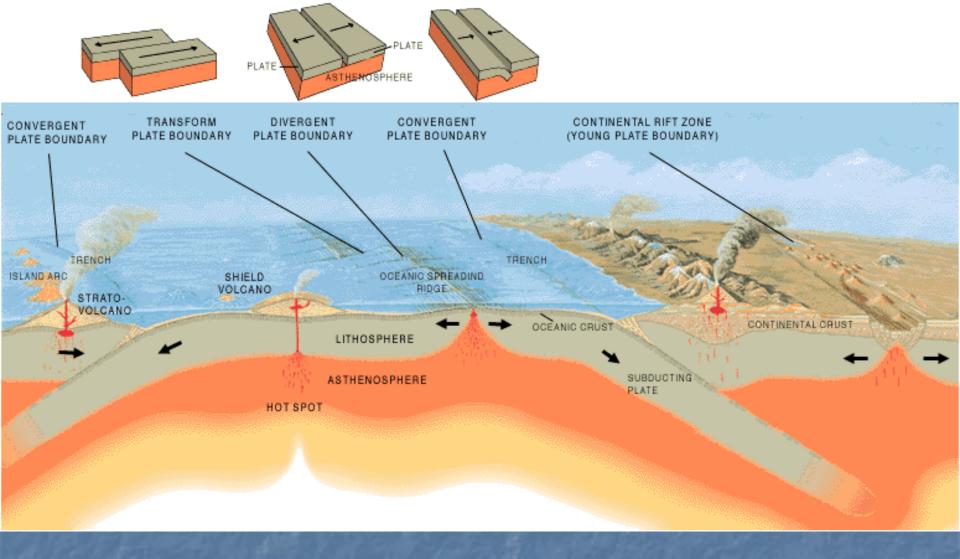


Plate Tectonics













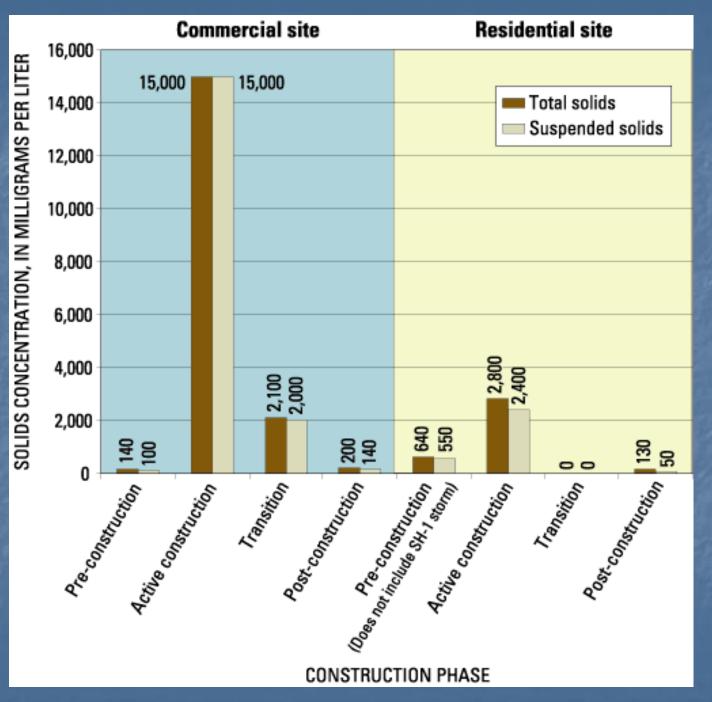








So What's the Problem??



Soil Erosion from Two **Small** Construction Sites, Dane County, Wisconsin, **USGS Fact** Sheet FS-109-00, August 2000



Coal Creek

Turbidity from construction of the:







In this class we will focus on erosion processes that are common to construction sites and are exacerbated by construction activities. These include:

EROSION BY SURFACE WATER

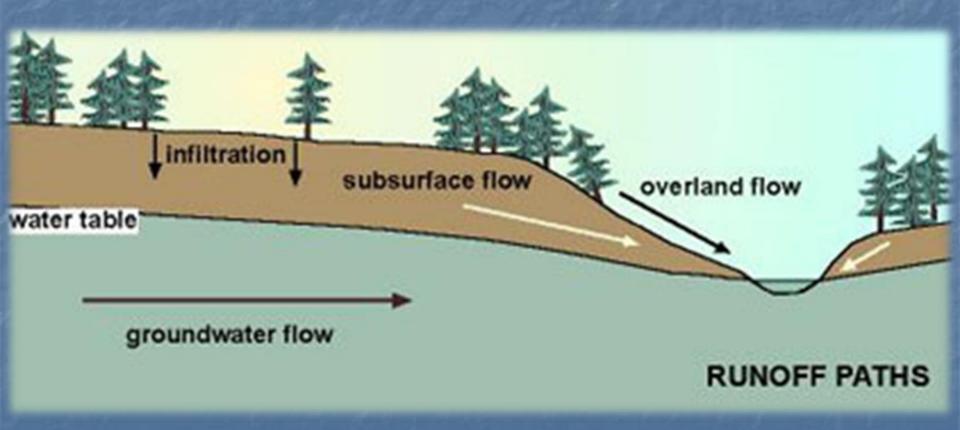
- Rainsplaash erosion
- Sheetwash Erosion
- •Rill Erosion
- Gully Erosion

MASS WASTING

WIND EROSION



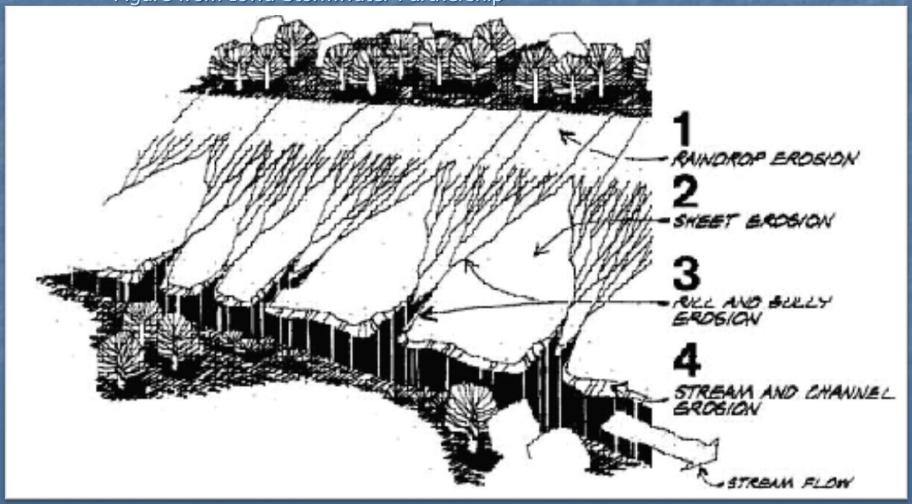
Runoff Paths



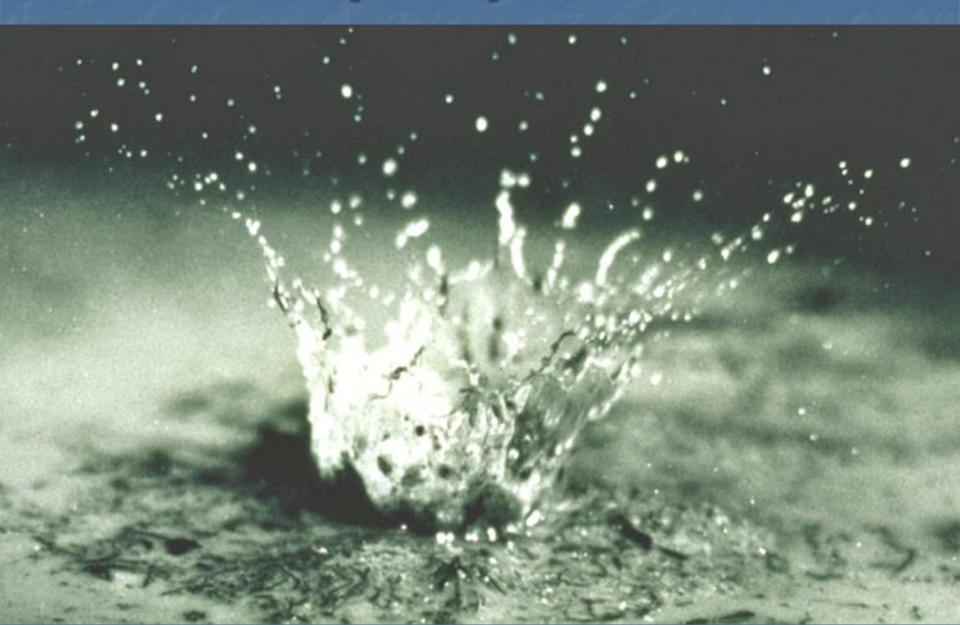
Single-Grain erosion Processes

Soil Erosion by Surface Water

Figure from Iowa Stormwater Partnership



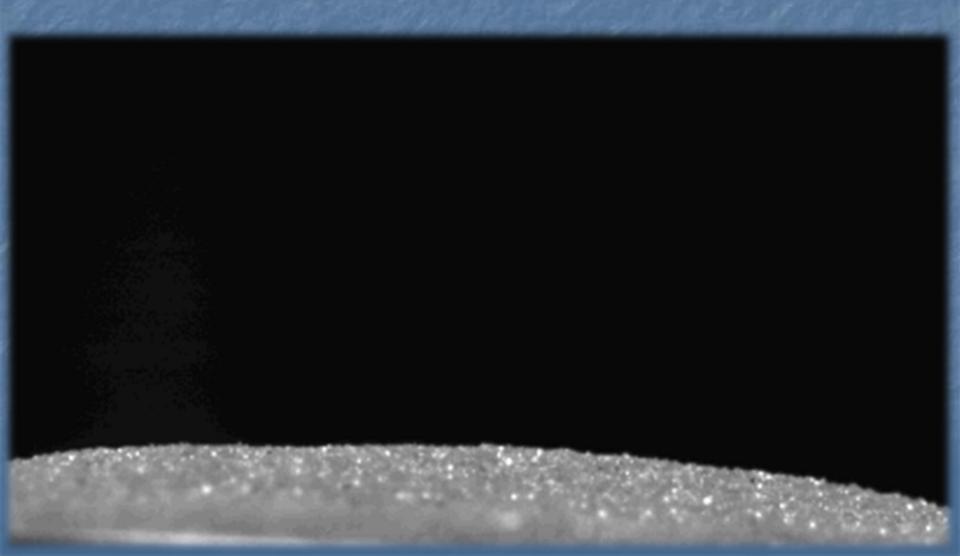
Raindrop Impact Erosion



Extreme Raindrop Impacts



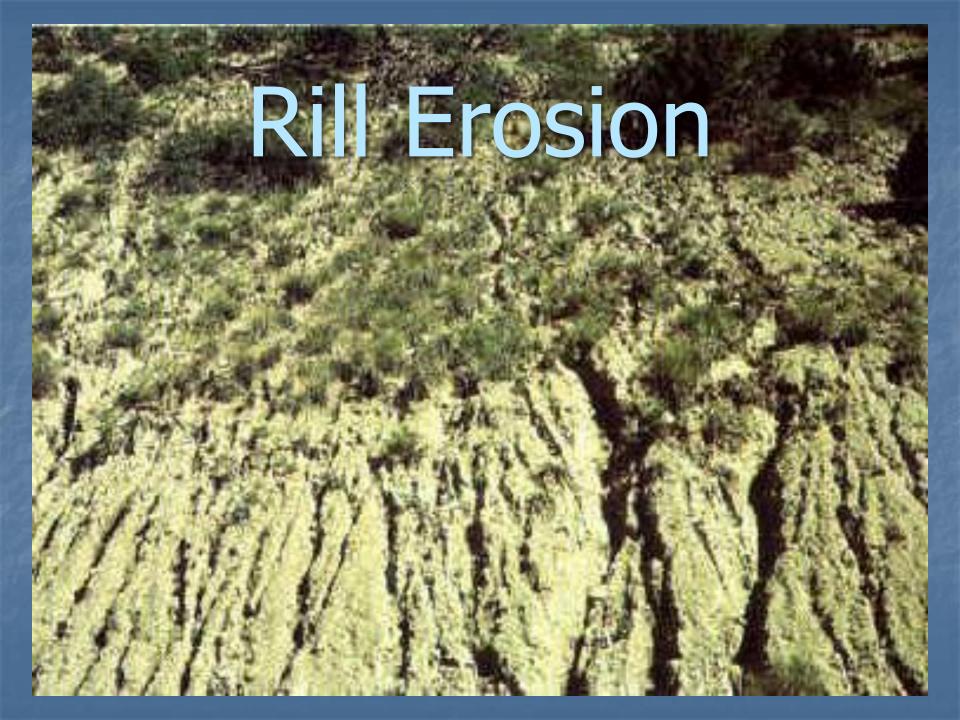
Rainsplash Video



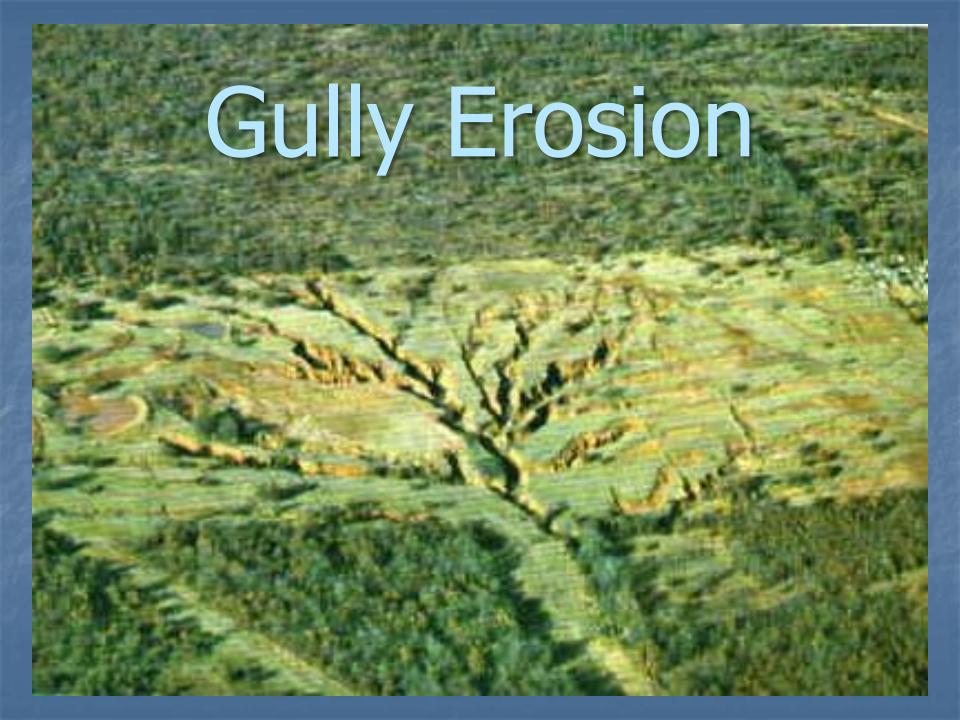


Sheet Flow on Exposed Soil



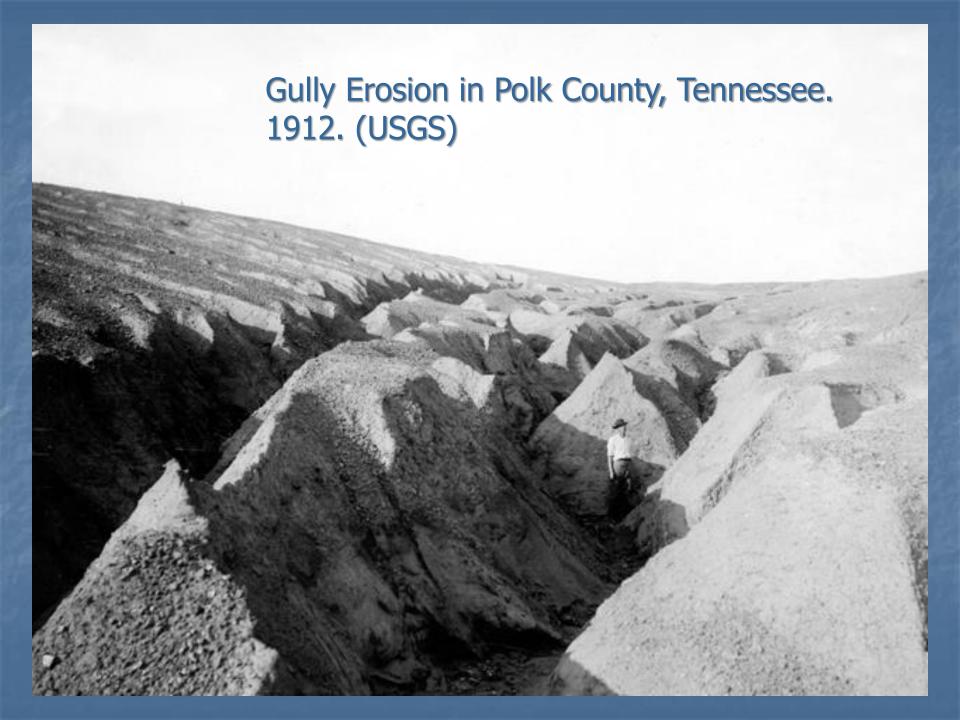








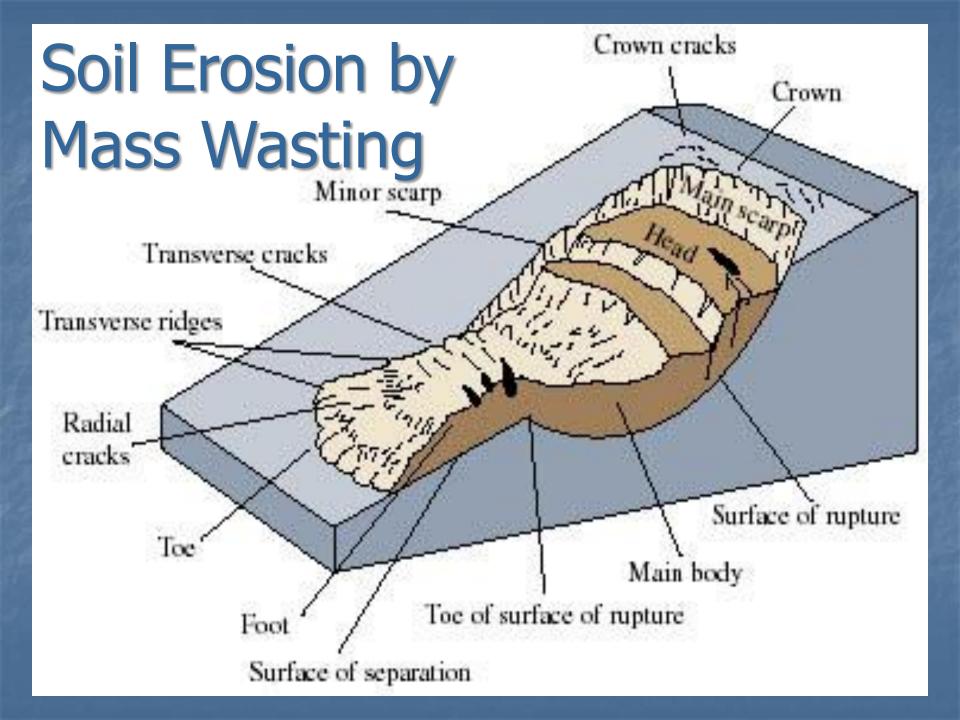


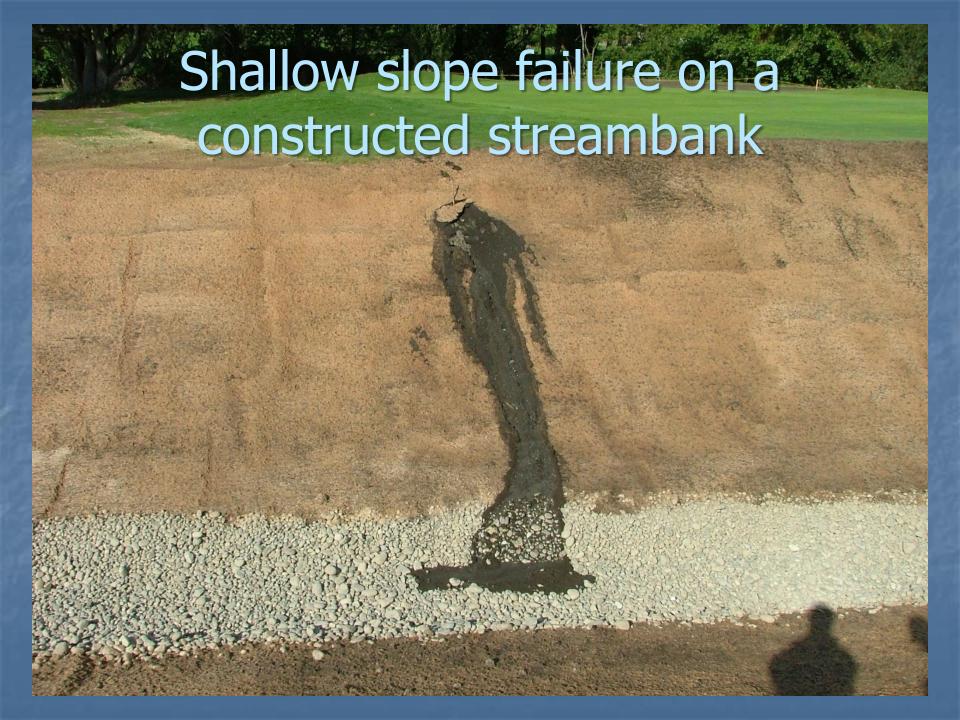






Describe how you would differentiate between a rill and a gully?

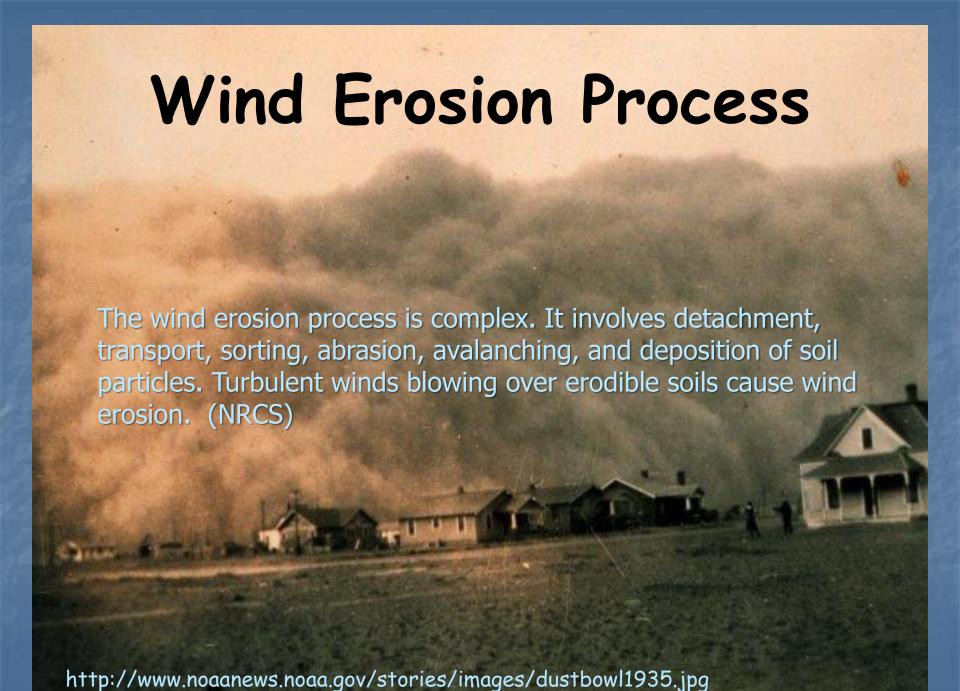




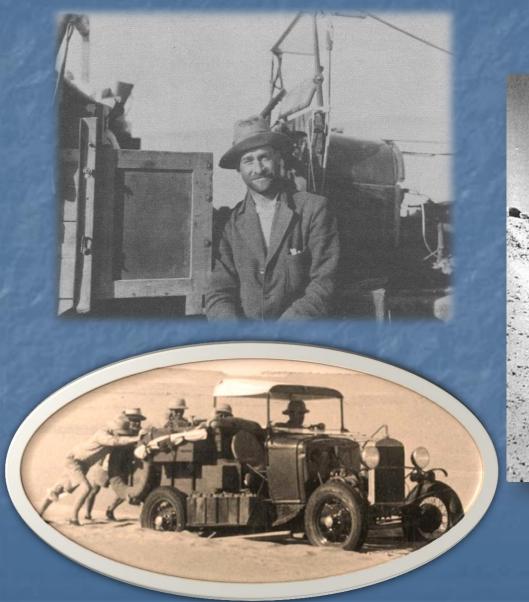






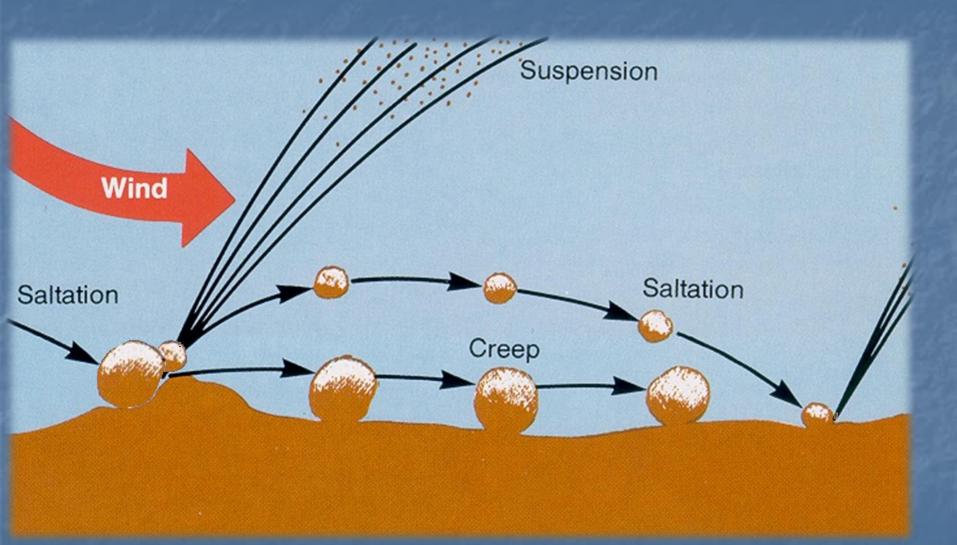


Much of what we know now about wind blown sediment transport is a result of the work of Ralph Bagnold





Mechanisms of Wind Transport





Dust Bowl Region

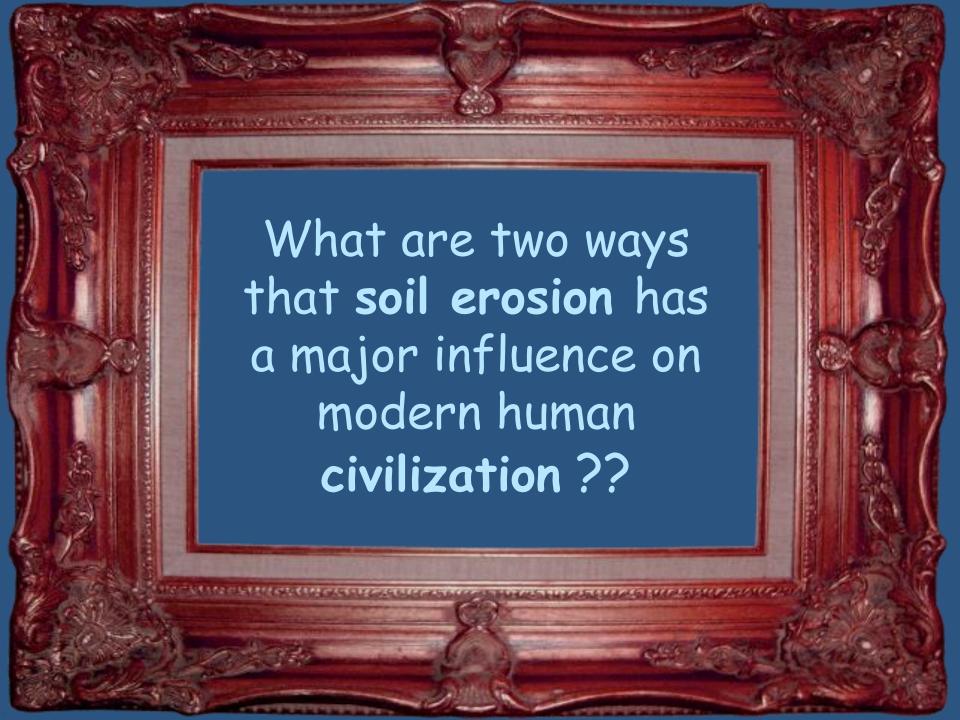




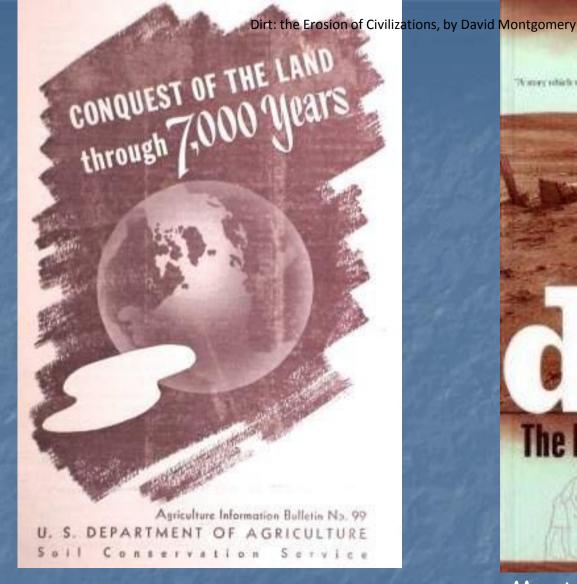




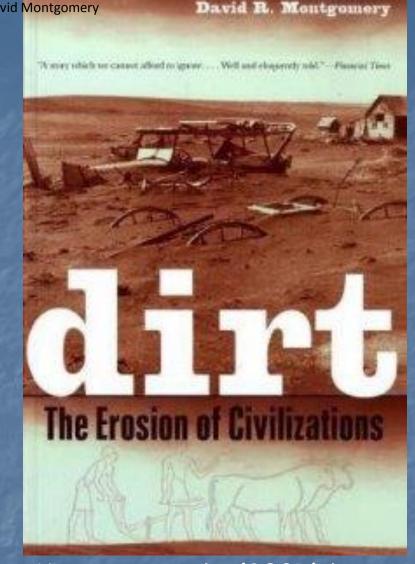




Man - despite his artistic pretensions, his sophistication, and his many accomplishments - owes his existence to a six inch layer of topsoil and the fact that it rains. ~Author and exact wording unknown



Lowdermilk W. C. (1939)
Conquest of the Land Through
Seven Thousand Years,
USDA Bulletin No. 99



Montgomery, D. (2007) Dirt the Erosion of Civilizations. University of California Press, 296p

